What is claimed is:

1. An electrochemical cell, which comprises:

a) an anode;

b) a cathode of a first fluorinated carbon having a relatively high energy density but a relatively low rate capability and a second cathode active material having a relatively low energy density but a relatively high rate capability; and

c) an electrolyte comprising at least one solvent for activating the anode and the cathode, wherein the fluorinated carbon is characterized as having been synthesized from a fibrous carbonaceous material having sufficient spacing between graphite layers to substantially restrict expansion due to solvent co-intercalation.

2. The electrochemical cell of claim 1 wherein the cell is dischargeable at a current pulse of at least about 15.0 mA/cm^2

3. The electrochemical cell of claim 1 wherein the fluorinated carbon synthesized from the fibrous carbonaceous material has a BET surface area of greater than about 250 m^2/g.

4. The electrochemical cell of claim 1 wherein the fluorinated carbon synthesized from the fibrous carbonaceous material has a particle size volume percent of less than about 15 μm.

5. The electrochemical cell of claim 1 wherein the fluorinated carbon synthesized from the fibrous carbonaceous material has a particle size surface area percent of less than about 3.5.

6. The electrochemical cell of claim 1 wherein the fluorinated carbon synthesized from the fibrous carbonaceous material has a DTA exotherm of about 652°C to about 656°C.

7. The electrochemical cell of claim 1 wherein the carbonaceous material is selected from the group consisting of carbon fibers with an annual ring layered structure having graphite crystallite edges exposed only on the cross-section, carbon fibers with a radial layered structure having the entire fiber surface with exposed graphite crystallite edges, and mesophase carbon microbeads with a radial-like texture having the entire surface of the microbead with exposed graphite crystallite edges.

8. The electrochemical cell of claim 1 wherein the second cathode active material is selected from the group consisting of SVO, CSVO, V_2O_5, MnO_2, $LiCoO_2$, $LiNiO_2$, $LiMnO_2$, CuO_2, TiS, Cu_2S, FeS, FeS_2, CVO, and mixtures thereof.

9. The electrochemical cell of claim 1 wherein the cathode has the configuration: SVO/current collector/CF_x/current collector/SVO.

10. The electrochemical cell of claim 1 wherein the cathode has the configuration: SVO/current collector/SVO/CF_x/SVO/current collector/SVO.

11. The electrochemical cell of claim 1 wherein the anode is lithium and the cathode has the configuration: SVO/current collector/CF_x, with the SVO facing the lithium anode.

12. The electrochemical cell of claim 1 wherein the first cathode active material is sandwiched between a first and second current collectors with the second cathode active material contacting the first and second current collectors opposite the first cathode active material.

13. The electrochemical cell of claim 12 wherein the first and second current collectors are titanium having a coating selected from the group consisting of graphite/carbon material, iridium, iridium oxide and platinum provided thereon.

14. The electrochemical cell of claim 1 wherein the anode is lithium, the first cathode active material is CF_x, the second cathode active material is SVO and the first and second current collectors are titanium or aluminum.

15. The electrochemical cell of claim 1 wherein the first fluorinated carbon is blended with the second cathode active material.

16. The electrochemical cell of claim 1 wherein the electrolyte has a first solvent selected from an ester, a linear ether, a cyclic ether, a dialkyl carbonate, and mixtures thereof, and a second solvent selected from a cyclic carbonate, a cyclic ester, a cyclic amide, and mixtures thereof.

17. The electrochemical cell of claim 16 wherein the first solvent is selected from the group consisting of tetrahydrofuran (THF), methyl acetate (MA), diglyme, trigylme, tetragylme, dimethyl carbonate (DMC), 1,2-dimethoxyethane (DME), 1,2-diethoxyethane (DEE), 1-ethoxy,2-methoxyethane (EME), ethyl methyl carbonate, methyl propyl carbonate, ethyl propyl carbonate, diethyl carbonate, dipropyl carbonate, and mixtures thereof, and the second solvent is selected from the group consisting of propylene carbonate (PC), ethylene carbonate (EC), butylene carbonate, acetonitrile, dimethyl sulfoxide, dimethyl formamide, dimethyl acetamide, γ-valerolactone, γ-butyrolactone (GBL), N-methyl-pyrrolidinone (NMP), and mixtures thereof.

18. The electrochemical cell of claim 1 including a lithium salt selected from the group consisting of $LiPF_6$, $LiBF_4$, $LiAsF_6$, $LiSbF_6$, $LiClO_4$, LiO_2, $LiAlCl_4$, $LiGaCl_4$, $LiC(SO_2CF_3)_3$, $LiN(SO_2CF_3)_2$, LiSCN, LiO_3SCF_3, $LiC_6F_5SO_3$, LiO_2CCF_3, $LiSO_6F$, $LiB(C_6H_5)_4$, $LiCF_3SO_3$, and mixtures thereof.

19. The electrochemical cell of claim 1 wherein the electrolyte is 0.8M to 1.5M $LiAsF_6$ or $LiPF_6$ dissolved in a 50:50 mixture, by volume, of propylene carbonate and 1,2-dimethoxyethane.

20. An electrochemical cell, which comprises:

a) a lithium anode;

b) a cathode of a first cathode active material of CF_x sandwiched between a first and second current collectors with a second cathode active material selected from the group consisting of SVO, CSVO, V_2O_5, MnO_2, $LiCoO_2$, $LiNiO_2$, $LiMnO_2$, CuO_2, TiS, Cu_2S, FeS, FeS_2, CVO, and mixtures thereof, contacting the first and second current collectors opposite the first cathode active material; and

c) an electrolyte comprising at least one solvent for activating the anode and the cathode, wherein the fluorinated carbon is characterized as having been synthesized from a fibrous carbonaceous material having sufficient spacing between graphite layers to substantially restrict expansion due to solvent co-intercalation.

21. The electrochemical cell of claim 20 wherein the current collectors are of titanium.

22. A method for powering an implantable medical device, comprising the steps of:

a) providing the medical device;

b) providing an electrochemical cell comprising the steps of:

i) providing an anode of an alkali metal;

ii) providing a cathode of a first cathode active material of CF_x sandwiched between first and second current collectors with a second cathode active material having a relatively low energy density but a relatively high rate capability in

comparison to the first cathode active material contacting the first and second current collectors opposite the first cathode active material; and

iii) activating the anode and cathode with an electrolyte comprising at least one solvent, wherein the fluorinated carbon is characterized as having been synthesized from a fibrous carbonaceous material having sufficient spacing between graphite layers to substantially restrict expansion due to solvent co-intercalation; and

c) electrically connecting the electrochemical cell to the medical device.

23. The method of claim 22 including discharging the cell to provide a current pulse of at least about 15.0 mA/cm^2.

24. The method of claim 22 including providing the fluorinated carbon synthesized from the fibrous carbonaceous material having a BET surface area of greater than about 250 m^2/g.

25. The method of claim 22 including providing the fluorinated carbon synthesized from the fibrous carbonaceous material having a particle size volume percent of less than about 15 μm.

26. The method of claim 22 including providing the fluorinated carbon synthesized from the fibrous carbonaceous material having a particle size surface area percent of less than about 3.5.

27. The method of claim 22 including providing the fluorinated carbon synthesized from the fibrous carbonaceous material having a mean DTA exotherm of about 652°C to about 656°C.

28. The method of claim 22 including selecting the second cathode active material from the group consisting of SVO, CSVO, V_2O_5, MnO_2, $LiCoO_2$, $LiNiO_2$, $LiMnO_2$, CuO_2, TiS, Cu_2S, FeS, FeS_2, CVO, and mixtures thereof.

29. The method of claim 22 wherein the anode is lithium, the first cathode active material is CF_x and the second cathode active material is SVO.

30. The method of claim 22 including providing the cathode having the configuration: SVO/current collector/CF_x/current collector/SVO.

31. The method of claim 22 including providing the cathode having the configuration: SVO/current collector/SVO/CF_x/SVO/current collector/SVO.

32. The method of claim 22 including providing the anode of lithium and the cathode having the configuration: SVO/current collector/CF_x, with the SVO facing the lithium anode.